XD 3.6 Release Notes

1 Introduction

1.1 Purpose

The purpose of these Release Notes is to:

- Communicate any known limitations for Mirada's XD release.
- Provide information on certain product features.

1.2 Scope

The scope of these Release Notes is Mirada's XD 3.6 product

1.3 Disclaimer of Warranty

Mirada Medical makes no representations or warranties, either expressed or implied, by or with respect to anything in this document, and shall not be liable for any implied warranties of merchantability or fitness for a particular purpose or for any indirect, special or consequential damages.

1.4 Definitions

Term	Definition
AC	Attenuation Corrected
DICOM	Digital Images and Communication in Medicine.
NAC	Non Attenuation Corrected
PACS	Picture Archiving and Communication System
ROI	Region of Interest
SCP	Service Class provider (DICOM node to receive DICOM data)

2 XD 3.6 Release Notes

2.1 Known Limitations

2.1.1 FUXD-3137 NM Review Mode Preset Layouts after upgrade

If any layouts have been created in NM review mode using window level preset type 0-% max, then these window level presets will not be available after upgrading to XD 3.6. Layouts should be re-created using the equivalent option, Min-% Range.

2.1.2 FUXD-3116 Error attempting to export resampled Enhanced CT

XD does not support DICOM export of Enhanced CT as a resampled volume. Any attempt to perform a resampled export of Enhanced CT data will cause this error to be reported in the Messages window:

Uncaught exception on event dispatch thread (IllegalStateException: null)

There is no workaround to this issue until XD supports the resample export of Enhanced CT data.

2.1.3 FUXD-3115 Out of memory on exporting Enhanced CT

XD may report an out of memory error when exporting Enhanced CT as original data.

There is no workaround to this issue within XD. The Enhanced CT data loaded into XD must be transferred to the destination by some other means.

2.1.4 FUXD-2666 Encoding Holes in RT Structure Sets

XD encodes each hole within a region as a separate contour when writing to a DICOM RT Structure Set. This should be noted when reviewing XD generated contours on a RT Planning system.

2.1.5 FUXD-2645 Large Secondary Captures may slow down load times

XD allows the viewing of secondary capture images. These can include slice ranges, which can potentially be very large and affect load times and the amount of available memory. If performance is not as expected then these secondary captures should be de-selected before launching XD.

2.1.6 FUXD-2557 Inconsistent region shadowing when data bindings are changed

For PET/CT gated data, changing the data bindings after region creation may appear to exhibit inconsistent shadowing behavior. For threshold regions, the original shadow remains when the data binding is changed in the Data Management screen. When the threshold is edited the shadow appears on the new bound data, but is not removed from the old one as it should be (nor changed on the old one).
However when this region is converted to a painted region, using the editing brush, the old shadow disappears.

To work around this issue, it is recommended that any changes that need to made to the bindings in Data Management screen are performed before creating regions.

2.1.7 FUXD-2537 Inconsistent Regions across a deformable registration

A region created on the overlay layer of a fused view may not visually match an identical region created on the same dataset in a non-fused view if a deformable registration is in place between the datasets visible in the fused view.

This is a visual effect only and does not affect the underlying region statistics.

2.1.8 FUXD-2535 Slice range export can crop the image being exported

When exporting slice ranges, if the width of the view being exported exceeds the height, the image will appear slightly cropped in the preview displayed when exporting the slice range. This can be avoided by adjusting the width of the exported image (default 300) to be more than the height until the image preview contains all the desired image. An alternative is to slightly zoom out the view required before selecting the option to export the slice range.

2.1.9 FUXD-2533 MIP Generation displayed when playing Cine with MIP view present

When playing a cine for gated data with a MIP view on screen, a MIP generation message is displayed each time a different phase is displayed causing slow playback of the MIP. This can be avoided by selecting a layout that does not contain a MIP view.

2.1.10 FUXD-2515 Region Statistics Obscured by Cine Slider

The within-view VOI statistics may be slightly obscured if the cine slider is active in the image views. To view the obscured text, disable the cine slider (navigation tools). A hot key can be set to do this in [Tools->Options].

2.1.11 FUXD-2499 Transforming Regions Across Deformable Registrations

Regions transformed across deformable registration may not correspond exactly to the transformation indicated by the cross-hairs at all points on the boundary. This is a visual effect only and does not affect the underlying region statistics.

2.1.12 FUXD-2488 Exporting Gated PET Data

Exporting an original or re-sampled phase from a Gated PET series results in the exported data containing the gating related meta-information. In some systems this may result in the data appearing to be an entire gated series, whereas it is only one volume.

2.1.13 FUXD-2340 Paint Tool usage on off-axis views

When using the region paint and eraser tool, the depth can be set using the depth slider control. This depth is calculated from an axis oriented frame. When the paint tool is used in an rotated (off-axis) view, the depth applied to the painting operation may not be as expected. To avoid this issue, check the results after painting and adjust the depth as necessary when painting in off-axis views.

2.1.14 FUXD-2312 Launching XD with no supported data

If XD is started from the Mirada Application Launcher and no supported data is found, XD will close without displaying any message. If XD does not appear as you expect, check that at least one supported dataset is selected.

2.1.15 FUXD-2045 Goto Ruler created on rotated view

If a ruler is created on a rotated (off axis) view after which the orientation is changed, when the Goto ruler option is selected, the ruler will not be displayed. To workaround this issue, take a bookmark after creating the ruler. Double clicking the bookmark will then display the ruler.

2.1.16 FUXD-1941 - XD becomes unresponsive sometimes on 32-bit XP

Occasionally, XD will seem to be unresponsive or seem extremely slow to update to user interaction. This issue limited to Windows XP operating systems only.

If this situation occurs, simply press the “Restore” button in the top right of the XD window and then “Maximize” and then the application will continue to respond as normal.

2.1.17 FUXD-1379 - Some avi files do not play in VLC

Some avi files created in Mirada XD will not play in all media players, such as VLC. They will, however, play correctly in Windows Media Player and Apple’s Quicktime.

2.1.18 FUXD-1165 – No overwrite prompt on saving images to file from the Image Gallery

When saving Images from the Image Gallery to the file system, no warning is displayed should the folder being written to contain files with the same name as the system generated file names.

It is recommended that each time images are saved to file from the Image gallery, they are written to a new folder.

2.1.19 FUXD-618 - Fused MIPs Degrades Performance When Visible During Registrations

If a fused MIP is visible when registrations are being computed then each completed registration is applied to the Fusion MIP which takes a number of seconds to complete. This is most noticeable when performing manual registrations.

It is recommended that fused MIP pop up window views are closed prior to performing registrations and that a layout without a fused MIP view is selected before performing registrations.

2.1.20 RT-85 – Missing XD icons

If XD is installed alongside the Mirada RTx product and RTx is subsequently un-installed, the XD icons in Application Launcher will not be present. To restore the XD icons, run repair from

the XD application entry in Windows Control panel/un-install a program. Note: this will need to be run from a user account with the appropriate permissions to install applications.

2.1.21 RT-2 – Paint/Erase tools with small brush sizes do nothing in some views

When painting or erasing a region with the paintbrush size set to be smaller than a voxel, no voxels will be painted. This issue can be avoided by increasing the paintbrush size.

2.2 Product Notes

2.2.1 Data and 32-bit Operating Systems

32-bit operating systems are limited in the amount of available memory that can be allocated for XD to use. It is therefore recommended that to maintain good performance, no more than the following is loaded into XD on 32-bit systems:

a) Three timepoints of PET/CT Whole Body.

b) Two timepoints of Head and Neck data.

c) Two timepoints of Melanoma data.

d) One gated PET/CT study.

2.2.2 Create Ruler From Region Tool

The create ruler from region tool creates a bi-ruler (2D ruler) by calculating the long and short axes from the region selected. This bi-ruler is always taken from the smooth representation of the region. If the region display has been set to display voxel mask based regions, then the generated bi-ruler will appear to not exactly match the region.

2.2.3 Region Intensity Distribution Graph with multiple datasets

When multiple datasets are loaded into a particular role (e.g. gated CT, Multiphase CT) and a region has been propagated from one of the datasets to the others, then the Region Intensity Distribution Statistics will be displayed in the image views and the statistics displayed will pertain to the dataset for which they are displayed. The Intensity Distribution graph cannot be viewed in this case as no individual region can be selected. In addition, the statistics on the Intensity Distribution tab on the Findings Table will not be available.

2.2.4 CT Window and level presets ‘abdomen/pelvis’ and ‘chest’ presets have same value

Switching between ‘abdomen/pelvis’ and ‘chest’ window and level presets for CT datasets will appear to make no difference to the image visualisation.

No workaround is required. For the current release of the software the CT window and level presets for these two body parts have been intentionally set to the same value.

2.2.5 XD automatically adjusts out of range window and level values

If the user enters custom values to define the window & level by SUV, and the maximum value entered by the user is greater than twice the maximum SUV in the dataset, Mirada XD will automatically adjust the values to provide a suitable range.

No workaround is required as this is intended behaviour. Users should try to enter a suitable range of values based on the range of SUV found in the dataset.

2.2.6 Calculation of SUV

When using SUV calculation during PET assessment certain assumptions are made with regard to the reference time for the acquisition of the data series. Variability in interpretation of requirements outlined in the DICOM Standard with regard to determination of the start reference time during acquisition and the time of tracer injection may result in variability in the SUV values calculated by different vendors.

It is important to note that due to inconsistency of approach throughout the industry, the acquisition time used in SUV calculation may be any of the acquisition times presented in the DICOM data. It is equally important to note that SUV is affected by a number of physiological factors which cause variability (ref Von Schulthess, Clinical Molecular Anatomic Imaging, Lippincott, Williams and Wilkins, 2003 (ISBN: 0-7817-4144-0), pp. 86-87). Taking these two factors into account, SUV can be thought of as a simplified measure of radiopharmaceutical uptake which has a complementary rather than directive role in the assessment, treatment and staging of disease.

Note also that SUV calculations will only be possible for datasets that have all appropriate information. This includes:

- data source must be a PET Emission;
- activity must be expressed in appropriate units (BQML);
- appropriate decay correction must have been applied;
- half-life for radiopharmaceutical must be known.

Should SUV calculation not be possible, the SUV items on the Quantification Settings dialogs (accessible clicking on the modality overlays or by selecting Quantification Settings from the Image menu) will be marked as Unavailable.

Versions of the DICOM Standard prior to 2006 specify a Radiopharmaceutical Start Time for PET series. This is the actual time of radiopharmaceutical administration to the patient for imaging purposes. However, the standard does not specify a date corresponding to this event, assuming it is the same date as the acquisition date. In some cases with long half-life radiopharmaceuticals, this may not be the case and there would be a need to specify a different date should the radionuclide creation date is different from the acquisition date, but this situation has not been captured in the DICOM standard. This is a source of ambiguity when dealing with datasets with incorrectly assumed radionuclide creation date.

Mirada XD makes an initial assumption that the date corresponding to the Radiopharmaceutical Start Time is the same as the Acquisition Date. This assumption works well, except when the acquisition has been performed over midnight. In such cases, the initial assumption will result in Acquisition Date/Times which appear to precede the assumed

Radiopharmaceutical Start Date/Time. If Mirada XD finds that the Acquisition Date/Times appear to precede the assumed Radiopharmaceutical Start Date/Time, it adjusts the assumed Radiopharmaceutical Start Date/Time by subtracting 24 hours. This correction will work correctly for datasets for which dates and times cross midnight, but not in other cases as there is not enough data in the DICOM header to assume any other option.

In summary, Mirada XD will use the Radiopharmaceutical Start Date/Time information in the data if present and calculate it as specified above if only the time is present.

2.2.7 Registration of Hybrid Data with inconsistent frame of Reference

Some PET/CT scanners are known to create PET and CT data with inconsistent frames of reference. XD will preserve the frame of reference for this type of data (i.e. not register the PET to the CT) as long as the data matches the pre-configured values for this behaviour defined in XD. Please contact Mirada support for further information or to add additional scanners to the system configuration.

2.3 Thin Client Deployment

This section is only applicable for users that access through the Mirada supplied thin client installation.

2.3.1 FUXD-2669 – Active text control and cine can skip slices

Using the active text control or the cine play control on the thin client deployment can cause XD not to display every slice. It is recommended that these navigation methods are not used if it is required that every slice is displayed.

2.3.2 FUXD-2654 - XD Appears unresponsive via Thin Client

Occasionally, when running via thin client, XD will seem to be unresponsive or seem extremely slow to update to user interaction.

If this situation occurs, press the “Restore” button in the top right of the XD window and then “Maximize” and then the application will continue to respond as normal.

2.3.3 Quantization of Colors on Client Systems

The system is configured to use 32-bit color on connecting to the server. This setting must not be changed. Grayscale images displayed on the client are identical to those displayed when XD is installed locally. However, the user should note that there is a minor difference in the displayed images of a remote client and a local XD when using non-grayscale color maps. This effect only affects the displayed image and there is no difference in any of the quantification values. It is recommended that images are also reviewed using grayscale colormaps.

2.3.4 Creating a Viewer Application Over Network is not recommended

Creating a viewer to a drive over a network connection (e.g. the clients hard drive) takes substantially longer than creating to the local server on the file system.

To workaround this issue, it is recommended that the viewer is created to the local server file system and copied via the operating system across the network to the desired location.

2.3.5 First Connecting to the Server may take longer the first time

On connecting to the Mirada Application Launcher running on the server for the first time, it may take up two minutes to logon while Windows configures the users profile.

2.3.6 The Application Launcher Datastore.

When each user connects to the Mirada Application Launcher remotely for the first time, if the datastore location is not set to be the default (C:\Datastore) then the user will be prompted to select the datastore location. All users should select the same datastore to use. Failure to do this will result in data received via the SCP being sent only to the datastore for which the SCP is configured. Note: administrator permissions are required to update the SCP to send to the selected datastore.

2.3.7 Logging onto the Server with the same user account from multiple machines

Each user should only log onto the Mirada Application Launcher running on the server once. If multiple logons are attempted, previous connections may be terminated and any unsaved work lost.

2.3.8 Shared Configuration Items

If any configuration items (e.g. report templates, layouts) are created by a user, then they will not be available to the other clients until the next time they connect.

In addition to this, Report Templates added for all users will not be available for selection on the report screen until they have been set as the default template for the review mode. This can be set in the Review Modes tab within [Tools>Options].

Shared layouts will be picked up by the system and displayed in the Review Modes tab also. They will not be available for selection until they are made available for a particular review mode.

2.3.9 Saving to the File System – Default Location

If any items are saved from XD or the Application Launcher, the default save location is in ‘My Documents’, i.e. C:\Users. This location is on the server, not on the client machine. As long as the network shares and permissions have been configured by IT, it is possible to save to the clients machine directly.

2.3.10 Fast Layout Switcher does not work as Intended

The CTRL+TAB method of switching layouts does not display the selector, it simply selects the next layout. It is recommended that this method of selecting layouts is not used for this deployment.